Draper Aden Associates

Cycle Systems, Inc.

CONSTRUCTION QUALITY ASSURANCE FINAL REPORT - Volume I

CQA Report, Figures and Tables, Appendix A, Appendix B, Appendix C

Walnut Avenue Lead Site
Roanoke, Virginia

Docket No. III-94-47-DC

6 February 1998

Draper Aden Associates
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Blacksburg ◆ Richmond

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10 February 1998

Airborne Express 5021538115

Mr. Mikal Shabazz
On-Scene Coordinator
U.S. Environmental Protection Agency
Region III
841 Chestnut Building
Mail Code 3HW32
Philadelphia, PA 19107

Subject: Walnut Avenue Lead Site, Roanoke, VA
Docket No. III-94-47-DC

Dear Mr. Shabazz:

Enclosed please find one (1) copy of the Construction Quality Assurance (CQA) Final Report for the above referenced site for your review and subsequent approval. The CQA documents the completion of the removal action activities as required in Paragraph 8.11 of the Administrative Order by Consent which was executed on 27 December 1994.

Upon the USEPA's final approval and reimbursement of project costs, we understand we will receive written notification that all obligations outlined in the Consent Order have been fulfilled and completed, thus closing your file on the project.

We appreciated the opportunity to work with you on this project as well as your willingness to approve modifications to the RAP which became necessary while on-site in order to continue progressing as scheduled.

If you have any questions regarding the CQA, please feel free to contact me on (540) 981-1211 ext. 18.

Sincerely,

CYCLE SYSTEMS, INC.

Tami Fulton Lowe

Tami Fulton Lowe
Project Coordinator

Enclosure

cc: James A. Conner - Cycle Systems, Inc.
Paul R. Thomson, Jr., Esq. - Woods, Rogers & Hazlegrove, PLC
Bren Huggins, P.G. - C.B. Huggins & Associates, Inc.
Ross G. Miller - Draper Aden Associates

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CONSTRUCTION QUALITY ASSURANCE FINAL REPORT

CYCLE SYSTEMS, INC.
WALNUT AVENUE LEAD SITE
ROANOKE, VIRGINIA

DOCKET NO. III-94-47-DC

Submitted to:

U.S. Environmental Protection Agency - Region III
841 Chestnut Building
Philadelphia, Pennsylvania 19107
Mr. Mikal Shabazz - On-Scene Coordinator

Prepared for:

Cycle Systems, Inc.
2580 Broadway, SW
Roanoke, Virginia 24014

Prepared by:

Draper Aden Associates
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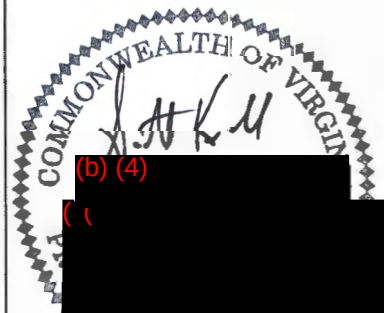
6 February 1998

DAA Job No. 7611.00



(b) (4)

[redacted]

ORIGINAL (Red)

CERTIFICATION STATEMENT

The following certification statement is being provided with the Construction Quality Assurance Final Report for the Cycle Systems, Inc. Walnut Avenue Lead Site Removal Action activities in accordance with Section 22 of the Consent Order.

"I certify that the information contained in or accompanying this Construction Quality Assurance Final Report is true, accurate and complete.

I am aware that there are significant penalties for submitting false information including the possibility of fines and imprisonment for knowing violations."

(b) (4) [redacted]

Assistant Secretary

Cycle Systems, Inc.

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1.0 INTRODUCTION

Draper Aden Associates (DAA) was retained by Cycle Systems, Inc. (Respondent) to perform quality assurance oversight of the Removal Action (RA) activities conducted at the Walnut Avenue Lead Site (Site) in Roanoke, Virginia. The purpose of the RA was to remove soil and materials with total lead concentrations in excess of a Removal Response Goal (RRG) of 1,000 milligrams per kilogram (mg/kg). The RA was undertaken in compliance with the Administrative Order by Consent (Order) Docket No. III-94-47-DC between the United States Environmental Protection Agency (USEPA) and Respondent dated 27 December 1994, and the Amended Administrative Order of Consent dated 29 July 1996. Respondent retained C.B. Huggins & Associates (CBH&A) to provide administrative support for the RA, and to serve as Respondent's technical counsel with the USEPA. Respondent retained Four Seasons Environmental (FSE) and Forrester Environmental Services, Inc. (FESI) to provide contracting services associated with the excavation and treatment phases of the RA, respectively. All field activities and sample analyses were conducted in accordance with: the Response Action Plan (RAP) dated 16 January 1995, the Modifications to the Removal Response Action Plan and Related Documents outlined in a letter from the USEPA to Respondent dated 27 February 1995, and the USEPA-approved Supplemental Removal Plan (SRP) dated 23 August 1996.

This Construction Quality Assurance Final Report (CQA Final Report) serves as documentation of completion of the RA in accordance with the Order and the project plans and specifications presented in the SRP. This report is submitted in accordance with Section 8.11 of the Order and includes the certification of compliance required under Section 22.2 of the Order. Photographic documentation of the removal activities is provided in Appendix A. Certifications of the materials used in the treatment process are provided in Appendix B. Copies of the non-hazardous waste manifests and weight tickets for the treated soil/material are included in Appendix C. Validated laboratory analytical results for the confirmation soil samples are included in Appendix D. Laboratory analytical results for the soil used as clean backfill at the Site are presented in Appendix E. The laboratory analytical results and non-hazardous waste manifest for the decontamination water are included in Appendix F. The health and safety monitoring logs, daily construction planning/completion reports, and sign-in logs are provided in Appendix G.

1.1 SITE DESCRIPTION

The Site is a 10-acre tract located at 338 Walnut Avenue, SE, in a predominantly industrial area of Roanoke, Virginia (Figure 1). The Respondent currently owns and uses the property for dismantling locomotives for resale and metal recycling. There are several buildings on the Site used for dismantling locomotives, equipment storage and office space (Figure 2). A large, open-roofed area situated on the Site is used predominantly for

storage. Locomotive engine blocks and miscellaneous locomotive parts are also stored outside in the yard area.

The Site is bordered to the east by the Roanoke River, a rail line to the north, a transformer storage facility to the southwest and light commercial/industrial property to the south. Residential property is situated to the east of the Site, on the opposite side of the Roanoke River.

Access to the Site is restricted by fencing and locked gates. An alarm system provides Site security for the two buildings after hours, on weekends and holidays.

1.2 PROJECT BACKGROUND

The Site was previously owned and operated by Roanoke Iron and Bridge from the 1920's to 1986. Roanoke Iron and Bridge fabricated structural steel members for bridge construction and also fabricated steel bars and doors primarily for use in jail and prison construction. The principal manufacturing operations included cutting, bending, punching, welding, cleaning and painting raw steel materials. Reported prior uses of the property include: iron casting (1920's); a brickyard (early 1900's); and possibly as the town waste disposal area in the mid to late 1800's. Cycle Systems purchased the property at an auction on or about March 1988.

Previous investigations at the Site include an environmental assessment (EA) conducted by Risk Science International in 1987. The assessment indicated elevated concentrations of lead were present in soil at the Site. This assessment was conducted for a lending institution prior to Respondent's purchase of the property.

During a period between January 1988 and March 1988, the Respondent removed approximately 193,440 pounds of soil and foundry slag from the former painting area and from the former slag area. The material was transported to the hazardous waste facility operated by GSX in Barnwell, South Carolina for disposal. Confirmation samples collected from the excavations during a subsequent round of sampling yielded Extraction Procedure Toxicity (EP Tox) results below the regulatory limits for lead (Risk Science International Environmental Assessment dated 23 June 1988).

In January 1994, the United States Army Corps of Engineers referred the Site to Region III of the USEPA following the completion of an assessment that was part of the Roanoke River Flood Reduction Project (RRFRP). The USEPA Technical Assistance Team (TAT) conducted a Site Assessment in February 1994, which included the collection of several soil and surface water samples across the Site. The assessment indicated that elevated levels of lead (1,090 mg/kg to 5,200 mg/kg) were present in three isolated portions of the Site associated with past painting operations. These areas included the former painting area, the former slag area and a small drainage ditch adjacent to Picnic Area #1 (Figure 2).

In response to the three lead detections in excess of 1,000 mg/kg, an Administrative Order by Consent (Order) was drafted by USEPA Region III to address the delineation and removal of lead contaminated soils above the 1,000 mg/kg RRG. The elevated lead levels in these areas appeared to be related to past painting operations conducted at the Site. Following the 22 November 1994 USEPA inspection of the Site, the USEPA requested that the former foundry area and the river bank also be addressed in the sampling plan. Additionally, following a visual inspection of the Site on 16 March 1995, the USEPA also requested that the equipment storage area in the southern portion of the Site be addressed in the sampling program.

In accordance with Section 8.3 of the Order, the Respondent implemented a field sampling program to delineate the horizontal and vertical extent of the media containing lead above the RRG. This field sampling program was implemented as per the RAP dated 16 January 1995 and the Modifications to the Removal Response Action Plan and Related Documents outlined in a letter from the USEPA to Respondent dated 27 February 1995. The results of the field sampling program were presented to the USEPA in the Field Investigation Report (FI) dated 11 May 1995.

During the field sampling program, the Site was divided into six discrete areas:

- Equipment Storage Area (ESA);
- Drainage Ditch Area (DDA);
- Former Foundry Area (FFA);
- River Bank Segments (RBS);
- Former Slag Area (FSA); and
- Former Painting Area (FPA).

At the onset of the field investigation, the FSA and the FPA were originally addressed as two separate areas. However, as the sample grids for both areas expanded during the course of the field investigation, the two areas merged into one larger area. Therefore, the FSA and the FPA were grouped as one area, the FSA/FPA.

The data generated in the FI and the data generated by the previous investigations were used to delineate the areal extent of the media containing total lead concentrations above the RRG which would be removed from the Site. These areas are depicted on Figures 3, 4, 5, and 6.

1.3 REMOVAL ACTION ACTIVITIES REQUIRED UNDER THE ORDER

The Order stipulated that the Respondent accomplish the following items:

- Provide site security to preclude unauthorized access to the Site.

- Develop and implement an approved contamination study which characterizes the nature, concentration, extent and depth of lead contamination at the Site above 1,000 ppm.
- Identify and segregate the soil/materials contaminated above 1,000 ppm lead.
- Remove and properly dispose of soils/materials contaminated with lead above 1,000 ppm, or treat the lead contaminated soils/materials so as to reduce the lead contamination to below 1,000 ppm.
- Perform air monitoring during excavation.
- Conduct post excavation and/or treatment verification sampling to ensure that the requirements of the Order have been fulfilled.
- Transport all excavated soils designated for off-site disposal to an EPA-approved disposal facility and assure transportation and disposal in accordance with applicable laws and regulations.
- Implement erosion and surface water control measures.
- Remove and properly dispose of, or properly treat, all contaminated water and/or wastes generated as a result of the lead removal activities.
- Conduct site activities under a site-specific Health and Safety Plan.

The identification of the extent of lead-contaminated areas was conducted during the FI. Using the results of the FI, a SRP was prepared which detailed the plans and specifications for completing the work described above. This plan was approved by USEPA, and the Respondent subsequently retained FSE and FESI to provide contracting services associated with the excavation and treatment phases of the RA, respectively. The Respondent retained DAA to perform quality assurance oversight of the RA excavation and treatment activities, and to collect confirmation soil samples to ensure that the media with total lead concentrations exceeding the RRG were removed from the Site.

On-site activities for the RA began on 20 October 1997. All excavated media were treated on-site and transported to the USA Waste of Virginia Maplewood Facility in Amelia County, Virginia for disposal. With the exception of excavation backfilling and the disposal of decontamination water generated during field investigation activities, all on-site excavation, treatment, and disposal activities were completed on 17 December 1997. The decontamination water was transported to the Holston Companies waste water treatment facility in Cloverdale, Virginia for treatment on 19 January 1998. Site backfilling and regrading activities were completed on 23 January 1998. The completion of these activities, with associated quality assurance, is described in detail in Section 2.0, *Scope of Removal Action*.

1.4 *PROJECT ORGANIZATION*

The organization of the project team which completed the RA is summarized in Figure 7. In addition to the USEPA On-Scene Coordinator and the Respondent, the project team consisted of the following:

Technical Counsel/Project Admin.	C.B. Huggins & Associates;
Oversight/Sampling/Report Prep.	Draper Aden Associates;
RA Excavation Contractor (RAEC)	Four Seasons Environmental;
RA Treatment Contractor (RATC)	Forrester Environmental Svcs., Inc.;
Laboratory	Q-Biochem, Inc.;
Transportation Contractors	Thompson Trucking; WHPT Trucking; and
Disposal Facility	USA Waste Maplewood Facility.

The RAEC prepared the Site prior to excavation (cleared vegetation, installed erosion controls, designated work zones, etc.), excavated the media with total lead concentrations exceeding the RRG, and transported the excavated media to the on-site treatment area. The RATC, with the assistance of trained Respondent employees, treated the material prior to transport off-site. The Respondent employees assisting with the treatment activities also loaded the treated material into the transportation contractors' vehicles for transport to the disposal facility. DAA performed quality assurance oversight of the RA excavation and treatment activities, and collected confirmation soil samples to ensure that the media with total lead concentrations exceeding the RRG were removed from the Site.

1.5 *PURPOSE OF REPORT*

Section 8.11 of the Order requires submittal of a Final Report within 20 calendar days of the date that the Respondent concludes that implementation of RA activities has been completed. The purpose of this CQA Final Report is to provide a permanent record of the activities conducted at the Site as part of the RA, and to provide certification that all activities were conducted in accordance with the approved plans and specifications for the RA as presented in the SRP. This report also includes compliance certification by the Respondent, as required under Section 22 of the Order, as well as certification by a registered professional engineer.

Section 2.0 of this report provides details regarding the scope of RA activities. Section 3.0 discusses future Site activities and monitoring. The certification of completion for the project is discussed in Section 4.0, while the required certification statements and signatures are presented at the beginning of this report.

1.6 CHRONOLOGY OF EVENTS

A summary of significant events in the implementation of the work required under the Order is presented in Table 1. On-site activities are discussed in Section 2.0, *Scope of Removal Action*, and associated Appendices.

2.0 SCOPE OF REMOVAL ACTION

The Scope of Work for the RA activities at the Site was based on the Order, which stipulated that soil/material exhibiting total lead concentrations exceeding 1,000 ppm must be removed and transported off-site for disposal or treated so as to reduce the lead contamination to below 1,000 ppm. During the 1995 field investigation, it was determined that the source of the high lead concentrations at the Site was attributable to the presence of lead-based paint residues in the Site soils. In order to meet the requirements of the Order, approximately 6,376 tons of soil/material were excavated from the areas of concern and subsequently treated/stabilized on-site to bind the lead into a non-hazardous, non-leachable form. Following receipt of laboratory confirmation of the effectiveness of the treatment process, the treated material was transported off-site to an approved Subtitle D facility for disposal (USA Waste of Virginia Maplewood Facility).

Details and documentation of the RA activities are presented below. Photographic documentation of the RA activities is provided in Appendix A.

2.1 SITE PREPARATION

As outlined in the SRP, initial Site preparation began with the Respondent contacting local officials to determine the necessity for any permits and approvals to conduct the RA activities. In particular, an Erosion and Sediment (E&S) Control Plan (dated 9 December 1996) was submitted to the City of Roanoke Planning Department for review and approval. The City of Roanoke Planning Department completed review of the E&S Control Plan and issued a six-month E&S Control Permit (Building Permit No. 970411-12LD) on 11 April 1997. On 4 September 1997, Respondent requested a six-month extension of the E&S Control Permit to cover the anticipated RA work schedule. Written notification from the City of Roanoke Planning Department granting extension of the E&S Control Permit was received on 24 September 1997.

The RAEC mobilized to the Site on 20 October 1997. The RAEC cleared vegetation and debris from the ESA, FFA, and FSA/FPA on 21-24 October 1997. The RAEC installed E&S controls (silt fence and straw bales) along the bottom of the river bank in the FFA and FSA/FPA on 23-24 October 1997. On 24 October 1997, the RAEC established the various excavation work zones: four (4) exclusion zones (ESA, DDA, FFA, and FSA/FPA), five (5) contaminant reduction zones (one each immediately outside of the ESA, DDA, and FFA exclusion zones; two at the north and south corners of the FSA/FPA exclusion zone), and the support zone (area from the block office building south to the Site access gate. Orange safety fence was used to designate the exclusion zones for the ESA, FSA/FPA, and the portions of the FFA outside of the chainlink fence. Access to the exclusion zones was directed through the contaminant reduction zones. Personnel decontamination and PPE removal were conducted in the contaminant reduction zones.

On 23 October 1997, a DAA survey crew mobilized to the Site to locate the former soil sample stations from the 13 March-7 April 1995 field investigation. This information was used to determine the necessary excavation depths within the removal areas. The survey crew met health and safety training requirements in accordance with OSHA Standard 1910.120. The surveyors finished locating the former sample stations on 27 October 1997.

The treatment area work zones were established on 24 October 1997. A concrete slab within the aluminum frame building in the FPA, southwest and adjacent to the loading dock, was established as the location of the treatment unit (Figure 6). A staging area for the treatment chemical tankers was established to the southwest of the treatment unit location. The FPA was designated as a staging area for excavated material from the various exclusion zones pending treatment. Four bays along the northwest side of the aluminum frame building were designated as temporary storage locations for the treated material pending analytical confirmation of the effectiveness of the treatment process and subsequent transport of the material off-site. The treatment unit, treated material storage area, and treatment chemical tanker staging area were designated as exclusion zones. An area northwest of the treatment chemical tanker staging area and southwest of the treated material storage area was designated as a contaminant reduction zone for personnel decontamination and PPE removal. Access to the treatment area was directed through the southwestern entrances of the aluminum frame building.

The RATC mobilized to the Site on 4 November 1997. The treatment unit (Extec 6000 Turbo screener) and the first treatment chemical tanker were also delivered to the Site on 4 November 1997. The RATC constructed the chemical delivery system from the tanker to the treatment unit on 5 November 1997.

2.2 CLEARING OF VEGETATION AND DEBRIS

The RAEC began vegetation and debris clearing activities on 21 October 1997. The RAEC used a track hoe, bush hog, and chainsaw to clear vegetation from the ESA, FFA, and FSA/FPA. Vegetation removal was conducted in accordance with the SRP; specifically, above ground vegetation was cut and removed with as little root disturbance as possible. In addition to the vegetation, piles of brick and concrete debris in the FFA were also removed from the Site during clearing activities. The debris was visually inspected for the presence of soil particles prior to removal; any soil discovered was brushed from the debris prior to removal from the FFA in accordance with the SRP. As agreed by the Respondent and USEPA-OSC, the cut vegetation and debris was transferred to rolloff containers outside of the removal areas and transported to the Roanoke Valley Resource Authority transfer station for disposal. Vegetation and debris clearing activities were completed on 24 October 1997.

2.3 *EROSION AND SEDIMENTATION CONTROL*

An E&S Control Plan was submitted as part of the SRP. The E&S Control Plan was also submitted to the City of Roanoke Planning Department for review and approval; the City approved the Plan and issued an E&S Control Permit (Building Permit No. 970411-12LD) for the Site.

On 23-24 October 1997, the RAEC installed E&S controls along the base of the river bank in the FFA and FSA/FPA following the clearing of vegetation and debris. The RAEC also installed E&S controls along the base of the river bank in the DDA on 29 October 1997 prior to excavation in that area. Due to the rocky nature of the base of the river bank at the Site, the RAEC was unable to install the super silt fence specified in the E&S Control Plan. Therefore, normal silt fence supported with straw bales was installed at the base of the river bank in the areas to be excavated on the river bank.

The E&S controls along the base of the river bank were left in place following the completion of removal and backfilling activities at the Site to prevent sediment runoff into the Roanoke River from exposed backfill material. Once the re-seeded vegetation in the excavated river bank areas grows sufficiently to prevent sediment runoff, the silt fences will be removed.

2.4 *SOIL/MATERIAL EXCAVATION*

The RAEC began Site excavation activities on 27 October 1997, and completed Site excavation activities on 15 December 1997. All excavation activities were conducted in accordance with the USEPA-approved SRP dated 23 August 1996.

Only the equipment used to excavate the soil/material entered each exclusion zone. Using the excavation equipment, the RAEC loaded the soil/material into a dump truck stationed just outside of the exclusion zone. The dump truck then transported the media to the FPA for temporary stockpiling pending treatment. At an entrance at the northern end of the FPA, the dump truck backed onto steel plates that extended just inside the FPA and dumped the soil/material. A loader then moved the soil/material to a stockpile within the interior of the FPA; the material from each exclusion zone was segregated into its own stockpile. In this manner, the dump truck did not track contaminated soil through clean areas at the Site. RAEC personnel performed all excavation and material moving activities wearing Level C (respirators and Tyvek© coveralls) personal protective equipment (PPE).

2.4.1 *Equipment Storage Area (ESA)*

On 27-29 October 1997, the RAEC excavated the soil/material with total lead concentrations exceeding the RRG in the ESA. The boundaries of the excavation are illustrated on Figure 3. Excavation in the area ranged from a depth of approximately one

foot to approximately four feet. Colored flags were used to denote the portions of the ESA which would be excavated to depths greater than one foot. In addition, DAA personnel provided oversight during the excavation activities to visually inspect the area for the presence of paint; excavation continued until no paint was visible.

Approximately 249 tons of soil/material were removed from the ESA. Excavation in the ESA was slowed due to the presence of steel and concrete obstructions in the subsurface. In addition, the area excavated was larger than originally estimated in the SRP due to the presence of paint nodules observed at the ground surface in the southern portion of the ESA upon removal of the vegetation and equipment stored in the area. On 29-30 October 1997, DAA personnel collected 11 confirmation soil samples from the floor of the ESA excavation (CESA-1 through CESA-11; Figure 3). The analytical results received on 31 October 1997 for these samples indicated that the soil/material with total lead concentrations exceeding the RRG had been removed from the ESA. Confirmation sampling details are discussed in Section 2.6.1.

2.4.2 Drainage Ditch Area (DDA)

On 29 October 1997, the RAEC cleared vegetation in the DDA, installed silt fence with straw bales at the base of the river bank, and excavated soil/material with total lead concentrations exceeding the RRG. The boundaries of the DDA excavation are illustrated on Figure 4. Excavation in the area initially ranged from a depth of six inches in the northern portion of the area to a depth of approximately three to four feet in the southern portion of the area. On 30 October 1997, DAA personnel collected one (1) confirmation soil sample from the floor of the DDA excavation (CDDA-1; Figure 4). The analytical result for the confirmation sample indicated that total lead concentrations exceeding the RRG were still present in the DDA soil. Therefore, the RAEC excavated an additional foot in the southern portion of the DDA on 5 November 1997. On 7 November 1997, DAA personnel collected another confirmation soil sample from the floor of the DDA excavation (CDDA-2); the analytical result for this confirmation sample indicated that the soil/material with total lead concentrations exceeding the RRG had been removed from the DDA. Approximately two (2) tons of soil/material were removed from the DDA. Confirmation sampling details are discussed in Section 2.6.1.

2.4.3 Former Foundry Area (FFA) and Under Roof Area (UR)

2.4.3.1 Former Foundry Area (FFA)

On 30 October 1997, the RAEC began excavating the soil/material with total lead concentrations exceeding the RRG in the FFA. The boundaries of the excavation are illustrated on Figure 5. Excavation in the area initially ranged from a depth of approximately one foot to approximately three feet. Colored flags were used to denote the portions of the FFA which would be excavated to depths greater than one foot. In addition, DAA personnel provided oversight during the excavation activities to visually inspect the area for the presence of paint.

On 31 October 1997, the excavation in the southwest corner of the FFA adjacent to the aluminum frame building extended to a depth ranging from approximately two feet to six feet due to the presence of a gray slag-like material that was suspected to contain lead. DAA personnel collected four (4) confirmation soil samples (CFFA-1 through CFFA-4) as well as a sample of the gray material (FOUND-1) on 31 October 1997 (Figure 5). The analytical results received on 4 November 1997 for these samples indicated that the metal did not contain total lead concentrations exceeding the RRG, and that the soil/material with total lead concentrations exceeding the RRG in this area had been removed.

The initial excavation in the FFA was completed on 5 November 1997. On 6 November 1997, DAA personnel collected 10 confirmation soil samples from the floor of the FFA excavation (CFFA-5 through CFFA-14; Figure 5). The analytical results received on 7 November 1997 for these samples indicated that total lead concentrations exceeding the RRG were still present at locations CFFA-5, CFFA-6, and CFFA-9. The RAEC excavated an additional one to three feet in these areas on 10-11 November 1997, and DAA personnel collected three (3) additional confirmation samples (CFFA-15 through CFFA-17; Figure 5). The analytical results received on 12 November 1997 for these samples indicated that the soil/material with total lead concentrations exceeding the RRG had been removed from the FFA.

Approximately 710 tons of soil/material were removed from the FFA. Because the property line dividing the Respondent's property from an adjacent property runs through the middle of the FFA (Figure 5), the soil/material was segregated during excavation based on whether it came from the Respondent's property or from the adjacent property. Approximately 378 tons of the material removed from the FFA came from the Respondent's property, and approximately 332 tons of material came from the adjacent property.

2.4.3.2 Under Roof Area (UR)

While excavating in the FFA adjacent to the aluminum frame building on 31 October 1997, a layer of paint was observed in the building floor sub-base. The paint layer appeared to extend to a depth of approximately 1.5 feet below the floor surface. In order to determine whether this material contained total lead concentrations exceeding the RRG, DAA personnel collected a sample of the paint (UR-1) and a composite sample of the dust and gravel covering the floor in this area (UR-2) on 3 November 1997. The analytical results for these samples were received on 5 November 1997. Paint sample UR-1 exhibited a total lead concentration of 147,000 mg/kg. Composite sample UR-2 exhibited a total lead concentration of 5,620 mg/kg. Therefore, it was determined that excavation and removal would be required in the Under Roof area (UR).

The RAEC began excavation in the UR on 7 November 1997. The boundaries of the excavation are illustrated on Figure 5. Initial excavation in the UR extended to a depth of approximately two feet, and was completed on 11 November 1997. On 12

November 1997, DAA personnel collected two (2) confirmation soil samples from the floor of the UR excavation (CUR-1 and CUR-2). The analytical results for these samples indicated that total lead concentrations exceeding the RRG were still present. The RAEC excavated an additional one foot throughout the entire UR on 13-14 November 1997, and DAA personnel collected two (2) additional confirmation samples (CUR-3 and CUR-4). The analytical results received on 17 November 1997 for these samples indicated that the soil/material with total lead concentrations exceeding the RRG had been removed from the UR. Approximately 278 tons of soil/material were removed from the UR. Confirmation sampling details are discussed in Section 2.6.1

2.4.4 River Bank Segment #15 (RBS-15)

On 5 November 1997, the RAEC began excavation of the soil/material with total lead concentrations exceeding the RRG in RBS-15. Excavation in the area was limited to the use of hand tools due to the inaccessibility of the area by heavy equipment. The boundaries of the excavation are illustrated on Figure 5. The RAEC initially excavated the area to a depth of approximately two feet on 5 November 1997. On 6 November 1997, DAA personnel collected one (1) confirmation soil sample from the floor of the RBS-15 excavation (CRBS-1; Figure 5). The analytical result for sample CRBS-1 indicated that total lead concentrations exceeding the RRG were still present in the RBS-15 soil. Therefore, the RAEC excavated an additional one foot of soil/material from RBS-15 on 12 November 1997, and DAA personnel collected another confirmation soil sample from the floor of the excavation (CRBS-2). The analytical result for sample CRBS-2 also indicated that total lead concentrations exceeding the RRG were still present in the RBS-15 soil. The RAEC excavated an additional one foot of soil/material from RBS-15 on 18 November 1997, and DAA personnel collected another confirmation soil sample from the floor of the excavation (CRBS-3). The analytical result for sample CRBS-3 indicated that total lead concentrations exceeding the RRG were still present in the RBS-15 soil. However, the RAEC was unable to excavate further in RBS-15 due to the presence of rock at the bottom of the excavation. The Respondent and USEPA-OSC agreed that this isolated location would be surveyed and identified on the property plat as an area of soil with lead concentrations exceeding 1,000 mg/kg. In this manner appropriate health and safety and materials handling procedures could be taken should any future construction or demolition activity occur in that area. Approximately one (1) ton of soil/material was removed from RBS-15. Confirmation sampling details are discussed in Section 2.6.1.

2.4.5 Former Slag Area/Former Painting Area (FSA/FPA)

On 7 November 1997, the RAEC removed the Picnic Area #2 structure and the drum storage area fence in preparation for excavation of the FSA/FPA. On 11 November 1997, the RAEC began excavating the soil/material with total lead concentrations exceeding the RRG in the FSA/FPA. The boundaries of the FSA/FPA excavation are illustrated on Figure 6. Initially, excavation was anticipated to range from a depth of approximately one foot to approximately two feet throughout most of the area, with

deeper excavations to depths of four to six feet in isolated areas. Colored flags were used to denote the portions of the FSA/FPA which would be excavated to depths greater than one foot. In addition, DAA personnel provided oversight during the excavation activities to visually inspect the area for the presence of paint.

During the course of excavation activities, DAA personnel collected confirmation soil samples from the floor of the FSA/FPA excavation to ensure that the soil/material with total lead concentrations exceeding the RRG was being removed. Confirmation sampling details and analytical results are discussed in Section 2.6.1. In areas where confirmation sample analytical results indicated the presence of total lead concentrations exceeding the RRG, an additional one foot minimum of soil/material was excavated. In some instances, paint was still visible in the bottom of the excavation after the additional one foot of soil/material was excavated; therefore, excavation generally continued until no paint was visible before new confirmation samples were collected.

During excavation along the river bank to the north of the block office building, a large mass of metal turnings entrained with paint was discovered at depths ranging from two feet to approximately six feet below ground surface. A sample of just the metal turnings without paint (FSAMetal) was submitted for analysis for total lead. The analytical result for this sample indicated that the metal turnings by themselves did not contain total lead concentrations exceeding the RRG. However, because the metal turnings were mixed with lead-based paint fragments, the metal turnings were excavated, treated, and transported off-site for disposal.

In addition to the mass of metal turnings with paint encountered to the north of the block office building, large masses of paint were encountered in the subsurface along the river bank and in the northern portion of the FSA/FPA, particularly in the vicinity of the former locations of Picnic Area #2 and the drum storage area (Figure 6). Excavation continued in these areas until most of the visible paint was removed and confirmation samples exhibited total lead concentrations below the RRG. However, as illustrated on Figure 6, four isolated areas in the FSA/FPA with total lead concentrations exceeding the RRG could not be removed entirely. An area to the west of the former location of Picnic Area #2 could not be entirely removed due to river bank stability concerns. Similar areas to the north of the former drum storage area and to the north of the block office building could not be entirely removed due to concerns for the structural stability of the aluminum frame building and the block office building, respectively. Paint was observed in the subsurface in a small area around a building footer in the western corner of the FSA/FPA interior; the RAEC was unable to remove all of the paint due to the inaccessability of the location with both heavy equipment and hand tools. Per discussions between the Respondent and the USEPA-OSC, it was agreed that these areas would be surveyed and identified on the property plat as areas of soil with lead concentrations exceeding 1,000 mg/kg. In this manner appropriate health and safety and materials handling procedures could be taken should any future construction or demolition activity occur in those areas.

Approximately 5,136 tons of soil/material were removed from the FSA/FPA. Excavation in the FSA/FPA was slowed due to the presence of large paint masses in the subsurface, as detailed above. Final excavation depths ranged from approximately one foot to two feet within the southern half of the interior of the FSA/FPA, and approximately six feet to over ten feet along the river bank and in the northern half of the interior of the FSA/FPA. The RAEC completed excavation in the FSA/FPA on 15 December 1997.

2.5 SOIL/MATERIAL TREATMENT AND DISPOSAL

The treatment technology utilized for this project was a patented process developed by the RATC (FESI) that reduces the leachability of lead from a lead-bearing waste. The method contacts the lead-bearing waste with a water soluble phosphate and a complexing agent. This process forms a lead product which is less soluble than the lead originally in the waste, thereby reducing the leachability of the lead from the waste. A copy of the patent for this process (U.S. Patent No. 5,536,899), as well as a copy of FESI's qualifications and experience, is included as Appendix B. Treatability testing of the soils and paint residues were conducted to ensure that the technology would reduce the lead leachability to the point that these materials would pass TCLP analysis. The treatability testing yielded favorable results and the treatment process was approved by both the USEPA and the disposal facility.

The soil/material excavated from the removal areas was stockpiled in the FPA pending treatment. The soil/material from each area was segregated into its own stockpile. The RATC began treating the stockpiled soil/material on 6 November 1997. The RAEC loaded the stockpiled material into the treatment unit (Extec 6000 Turbo screener) using a front end loader equipped with a 7.5 cubic yard bucket. The material was screened through the unit to remove oversized material; all oversized material (costruction debris and rock) was conveyed to a pile located to one side of the unit for later treatment and off-site disposal. Following removal of the oversized material, the remaining soil/material was conveyed to the end of the treatment unit. The RATC installed the chemical delivery system at the end of the unit's conveyor; the soil/material was doused with the treatment chemical as it left the conveyor. Following treatment, the material was sampled to ensure that it had been treated adequately; samples were collected from approximately every 100 to 200 cubic yards of material treated. Following collection of the samples, the material was moved to the treated material storage area (Figure 6).

Because paint residues comprised a relatively small percentage of the oversized material, attempts were made to segregate the paint clumps from the material. However, because the debris and paint clumps were similar in size, the power screening unit was ineffective in segregating these materials; therefore, attempts were made to segregate them manually. However, a cost benefit analysis clearly indicated that it would be less

expensive to treat and dispose of these materials than it would be to manually segregate them.

In order to confirm the success of the treatment process, the SRP specified that a representative TCLP analysis for lead would be performed daily on the treated material prior to transport of the material off-site. In lieu of performing full TCLP extractions, a time consuming process that would create significant project delays, the RATC developed a surrogate TCLP extraction process which emulates a full TCLP extraction process and produces results in only two to three hours. The RATC had used this methodology previously on other lead sites with the approval of USEPA Region III, and the USEPA-OSC approved the use of this methodology for this project. Surrogate analyses were performed on approximately every 100 to 200 cubic yards of material treated, with a minimum of 10% of the samples also submitted for full TCLP lead analysis as a confirmation of the surrogate process. The surrogate TCLP and full TCLP samples were analyzed by Q-Biochem, Inc. (formerly ETS Analytical Services, Inc.) of Roanoke, Virginia. In this manner, the treated material was sampled and transported off-site within hours or, at most, one day following treatment.

Each treated batch that was sampled was segregated in the treated material storage area according to source area and surrogate sample. In this way, an individual batch could be re-treated if it failed the surrogate TCLP analysis.

The RATC trained Respondent personnel to assist with the treatment operations. The assisting Respondent personnel had been Health and Safety trained in accordance with OSHA Standard 1910.120. The same Respondent personnel moved the treated material to the temporary storage area following treatment, and also loaded the treated material into the transportation contractors' vehicles for transport to the disposal facility.

All treated material transported from the Site for disposal was properly manifested per the Department of Transportation regulations in Part 49 of the Code of Federal Regulations. The Respondent Project Coordinator was on-site to sign all manifest sheets. In addition, copies of the surrogate TCLP analytical results were faxed to the disposal facility prior to transport of the treated soil/material. Copies of the surrogate TCLP analytical results were also attached to each corresponding non-hazardous waste manifest. Copies of the non-hazardous waste manifests and weight tickets are included in Appendix C. The treated material was transported to the USA Waste of Virginia Maplewood Facility in Amelia County, Virginia for disposal.

All on-site treatment and disposal activities were completed on 17 December 1997. The treatment unit demobilized from the Site on 17 December 1997. The treatment chemical tanker was removed from the Site on 18 December 1997.

2.6 POST-EXCAVATION/TREATMENT ACTIVITIES

2.6.1 Confirmation Sampling and Analysis

As specified in the SRP, confirmation soil samples were collected from the floors of the excavations following the removal of the soil/material from the designated areas. The approximate locations from which the confirmation samples were collected are illustrated on Figures 3, 4, 5, and 6. A total of 87 confirmation samples were collected during the RA activities: 11 samples from the ESA, two (2) samples from the DDA, 17 samples from the FFA, four (4) samples from the UR, three (3) samples from RBS-15, and 50 samples from the FSA/FPA. All sampling and analyses were conducted in accordance with the Quality Assurance Project Plan (QAPP) and the Field Sampling Plan (FSP) presented in Appendix A of the RAP dated 16 January 1995, and with the Modifications to the Removal Response Action Plan and Related Documents outlined in a letter from the USEPA to Respondent dated 27 February 1995. In accordance with the QAPP, a total of 15 quality assurance samples - 5 equipment blanks, 5 blind duplicates, and 5 matrix spike/matrix spike duplicates - were collected during confirmation sampling activities.

The samples were submitted to Q-Biochem, Inc. (formerly ETS Analytical Services, Inc.) in Roanoke, Virginia for laboratory analyses in accordance with the custody, preparation and analytical methods presented in the QAPP. The laboratory analytical results for the confirmation samples are summarized in Table 2. The validated analytical results for the confirmation samples are included in Appendix D.

2.6.2 Site Restoration and Equipment Decontamination

Approximately 4,860 tons of clean soil was transported to the Site for use as backfill material in the excavated areas. Considerable backfilling was required in the FSA/FPA and along the river bank in order to ensure proper erosion and sediment control and to eliminate safety concerns in the areas of deeper excavation. Prior to transport to the Site, a sample of the backfill material was analyzed for: total RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), total halides, and total petroleum hydrocarbons - gasoline and diesel ranges. The laboratory analytical results indicated that the material was suitable for use as clean fill. A copy of the laboratory analytical results for backfill soil is presented in Appendix E.

The excavated areas in the ESA, DDA, and FSA/FPA were backfilled with clean soil. In the FFA, deep excavation areas along the river bank and adjacent to the aluminum frame building were also backfilled with clean soil. However, the majority of the FFA and RBS-15 were not backfilled but were regraded to match the surrounding areas. Following backfilling and grading, the areas along the river bank in the DDA, FFA, RBS-15, and FSA/FPA were sown with grass seed and covered with erosion control matting.

Following excavation in each area, the RAEC decontaminated the excavation equipment by physically removing all soil residues within the exclusion zones. In this manner, the excavation equipment did not track contaminated soil through clean portions of the Site during movement from one exclusion zone to another. Following the conclusion of all excavation activities at the Site on 15 December 1997, the excavation equipment was moved to the treatment area for decontamination. All soil residues were physically removed from the excavation equipment, and the equipment was sprayed with the treatment chemical and rinsed off with water. At the conclusion of treatment activities, the treatment unit was decontaminated using the same procedure. All equipment decontamination residues were sprayed with the treatment chemical and mixed with the treated soil/material for transport and off-site disposal.

Upon completion of equipment decontamination activities, the RAEC demobilized from the Site on 18 December 1997. Respondent personnel completed Site backfilling and regrading activities on 23 January 1998.

2.6.3 PPE Disposal

All waste PPE generated during the RA activities (Tyvek® suits, gloves, booties, respirator cartridges, etc.) was stored on-site in 55-gallon drums pending final disposal. In addition, four 55-gallon drums of waste PPE generated during the March-April 1995 field investigation activities were also stored on-site pending final disposal. On 17 December 1997, all waste PPE on the Site generated during RA activities and field investigation activities was moved to the treatment area and doused with treatment chemical to render any lead present on the waste non-hazardous, as approved by a representative of the disposal facility. Following treatment, the waste PPE was mixed with the final loads of treated soil/material and transported to the USA Waste Services of Virginia Maplewood Facility for disposal.

2.6.4 Decontamination Water Disposal

No decontamination water was produced during the RA activities. However, approximately 100 gallons of decontamination water produced during the March-April 1995 field investigation activities were stored on-site in labeled 55-gallon drums. A composite sample (DW-1) of the decontamination water was collected for waste characterization analyses on 7 April 1995 at the conclusion of the field investigation activities. The composite sample was analyzed for total petroleum hydrocarbons, total cadmium, total lead, total mercury, total silver, and total zinc in accordance with the City of Roanoke's criteria for discharge into the POTW. The composite sample exceeded the City of Roanoke limits for total lead and total zinc; therefore, the Respondent was unable to discharge the decontamination water into the POTW. The laboratory certificates of analysis for sample DW-1 are included as Appendix F.

Based on the analytical results for the composite sample, it was determined that the containerized decontamination water could be disposed of at a permitted non-

hazardous waste facility. The Holston Companies waste water treatment facility in Cloverdale, Virginia was chosen as the treatment facility for the decontamination water from the Site. On 19 January 1998, the Holsten Companies transported the drummed decontamination water to the Cloverdale waste water treatment facility. A copy of the non-hazardous waste manifest for the decontamination water is included in Appendix F.

2.7 HEALTH AND SAFETY MONITORING

The RAEC developed a Site-Specific Health and Safety Plan (HASP) for the RA activities. The RAEC's HASP was based on the revised Health and Safety Plan submitted and approved as part of the SRP; however, the RAEC's HASP was more stringent in that it required all excavation work to be performed using Level C PPE (full-face respirators, Tyvek© coveralls, gloves, overboots, and hardhats). The RAEC's HASP was followed by all personnel (RAEC, RATC, Respondent, DAA, and USEPA) who worked at the Site; any personnel in the exclusion zones near active excavation work were required to wear Level C PPE.

The RAEC also performed continuous monitoring of ambient airborne particulates during all Site activities. A PDR-1000 DataRAM Particulate Monitor was used to monitor ambient airborne particulates. All readings were below the action guidelines established for the Site. The RAEC's health and safety monitoring logs are included in Appendix G.

A gap in the air monitoring logs was present from 10 November 1997 to 26 November 1997. Air monitoring was conducted during the missing time frame, but the readings were not recorded. The monitoring data was lost when the RAEC attempted to download the information from the DataRAM. The RAEC Project Supervisor checked the instrument each day on a periodic basis and ensured that the readings were below the established action guidelines; however, the Project Supervisor did not document the results because it was assumed that the instrument was properly logging the data. In addition, all excavation work was performed using Level C PPE; therefore, the gap in the air monitoring logs is not considered a critical issue.

2.8 CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL AND INSPECTION ACTIVITIES

The Construction Quality Assurance (CQA) Plan submitted as part of the SRP was followed throughout the removal action. DAA conducted oversight of the RAEC and RATC activities throughout the removal action. Due to the nature of the RA activities, CQA measures for this action primarily consisted of observation and documentation of daily activities. Confirmation sampling was also conducted to verify that the media with total lead concentrations above the RRG had been removed (see Section 2.6.1, *Confirmation Sampling and Analysis*).

Oversight inspections were performed throughout the project by DAA personnel, the Respondent's Project Coordinator, RAEC and RATC personnel, and the USEPA-SATA. These inspections are noted and the actions taken as a result of the inspections are documented in the Daily Construction Planning/Completion Reports (Appendix G).

DAA and Respondent personnel were present during all excavation, treatment, removal, and confirmation sampling activities at the Site. Excavation, treatment, and disposal of the media with total lead concentrations exceeding the RRG was completed to the satisfaction of the USEPA-SATA, Respondent, and DAA personnel prior to RAEC and RATC demobilization.

It is noted that a plat of the property indicating the isolated areas where lead exists in excess of the RRG will be provided to the USEPA and filed with the City of Roanoke. The plat will be prepared by a surveyor licensed in the Commonwealth of Virginia.

The CQA documentation includes: Appendix A - Photographic Documentation; Appendix B - Treatment Process Certification; Appendix C - Non-Hazardous Waste Manifests and Weight Tickets for Treated Soil/Material; Appendix D - Inorganic Data Validation Reports and Laboratory Analytical Results for Confirmation Samples; Appendix E - Laboratory Analytical Results for Soil Backfill; Appendix F - Laboratory Analytical Results and Non-Hazardous Waste Manifest for Decontamination Water; and Appendix G - Health and Safety Monitoring Logs, Daily Construction Planning/ Completion Reports, and Site Sign-In Logs.

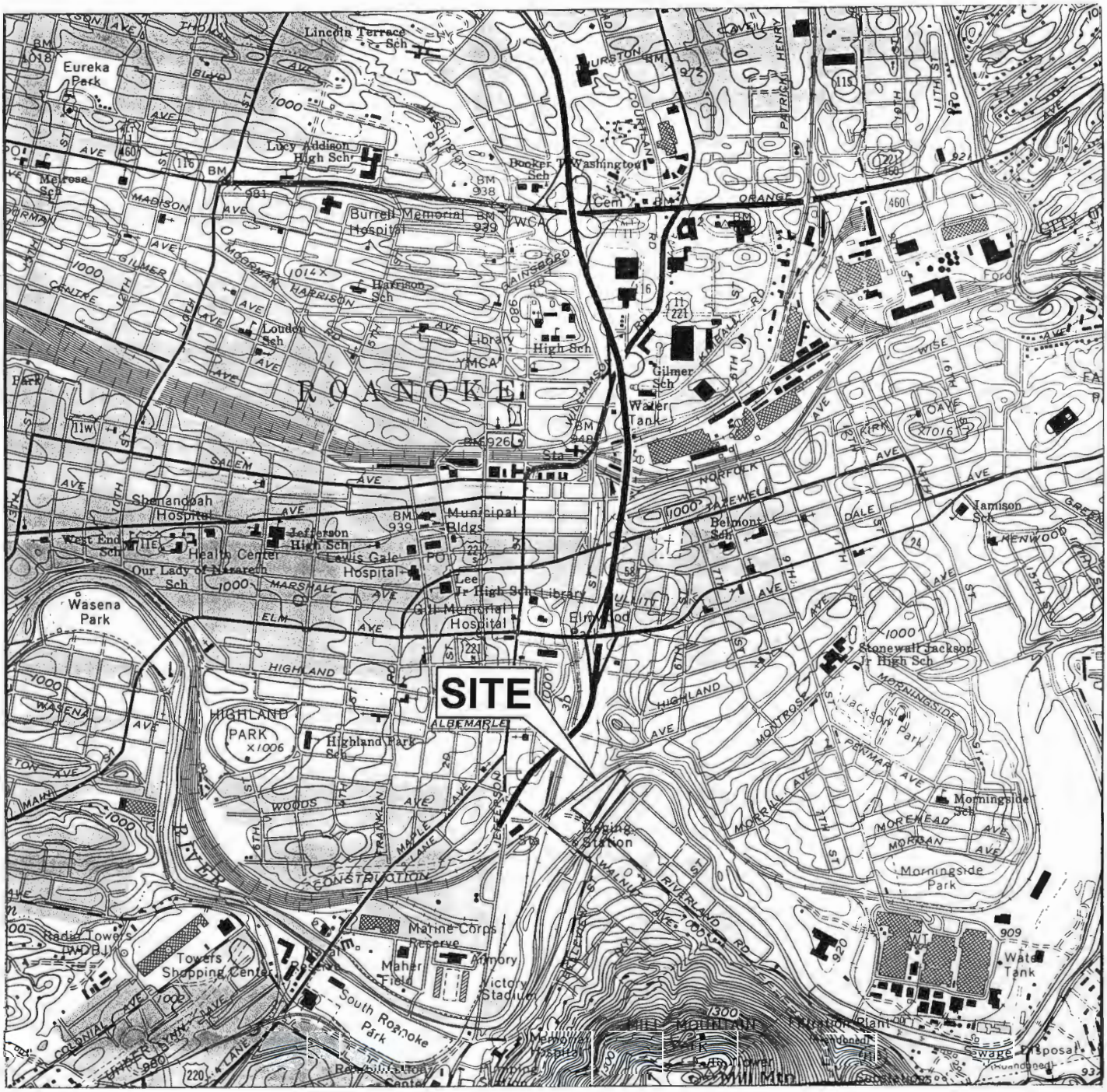
3.0 FUTURE SITE ACTIVITIES AND MONITORING

At present, no future Site activities or monitoring of the Site are planned as part of the RA. Upon acceptance of this CQA Final Report by USEPA, all work associated with the RA at the Site will be considered complete, and the Respondent will have complied in full with the requirements of the Order.

4.0 CERTIFICATION OF COMPLETION

As required by Section 22 of the Order, the certification statement presented at the front of this report has been prepared to certify that the RA has been implemented in full satisfaction of the requirements of the Order and the work specifications detailed in the RAP and SRP. Thus, in accordance with Sections 8 and 22 of the Order, this report requests USEPA's certification of completion of the RA.

FIGURES



Source: Roanoke, VA 7.5-Minute Series USGS Quadrangle Map

QUADRANGLE LOCATION

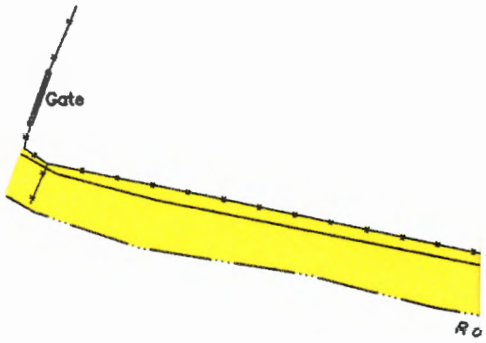
SITE LOCATION MAP

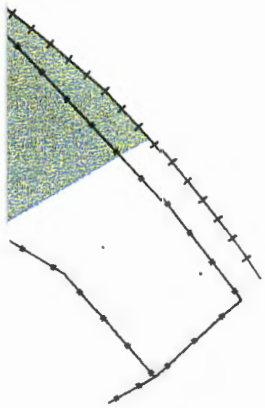
CYCLE SYSTEMS, INC.
Walnut Avenue Lead Site
ROANOKE, VIRGINIA

Draper Aden Associates
CONSULTING ENGINEERS
Blacksburg, VA - Richmond, VA - Nashville, TN

JOB No.	DATE:	SCALE:	FIGURE
7611	2 FEB 98	1"=2000'	1

Approxima
of Conc





Legend

Approximate Building Footprint

Approximate Railroad Spur

Source: Site Plan, *"Field Investigation Report - Cyc*
Lead Site," Environmental Resources Man

7611F2.DWG

Draper Aden Associates
CONSULTING ENGINEERS
Blacksburg, Virginia — Richmond, Virginia

SITE

SCALE: 1" = 80'

PLAN NO. 7611

FIGURE 2

N 5300
E 10000

N 5200
E 10000

LEGEND

ESA-10 551)	ESA CONFIRMATION SAMPLE LOCATION TOTAL LEAD CONCENTRATION (mg/kg)
	EXCAVATED AREA

7611F3.DWG

Draper Aden Associates
CONSULTING ENGINEERS
Blacksburg, Virginia – Richmond, Virginia

SITE

SCALE: 1" = 20'

PLAN NO. 7611

FIGURE 3

N 5400
E 10000

LEGEND

- CDDA–1 (1,400) DDA CONFIRMATION SAMPLE LOCATION TOTAL LEAD CONCENTRATION (mg/kg)

EXCAVATED AREA

PROPOSED TAKE LINE

NOTE: TAKE LINE FROM 28 JANUARY 1991 PLOT SHOWING PROPOSED EASEMENTS FOR ROANOKE RIVER FLOOD REDUCTION PROJECT BY T.P. PARKER & SON.

7611F4.DWG

Draper Aden Associates
CONSULTING ENGINEERS
Blacksburg, Virginia – Richmond, Virginia

SITE

SCALE: 1" = 10'

PLAN NO. 7611

FIGURE 4

ORIGINAL (Red)

LEGEND

FFA, UR. OR RBS CONFIRMATION SAMPLE LOCATION
TOTAL LEAD CONCENTRATION (mg/kg)

— PROPERTY LINE

— FENCE

— PROPOSED TAKE LINE

EXCAVATED AREA

AREA EXCEEDING 1,000 mg/kg LEAD IN SOILS THAT WERE UNABLE TO BE REMOVED

E LINE FROM 28 JANUARY 1991 PLOT
WING PROPOSED EASEMENTS FOR ROANOKE
ER FLOOD REDUCTION PROJECT BY T.P. PARKER
SON.

+ N 5700 E 10000

7611F5.DWG

Draper Aden Associates
CONSULTING ENGINEERS
Blacksburg, Virginia – Richmond, Virginia

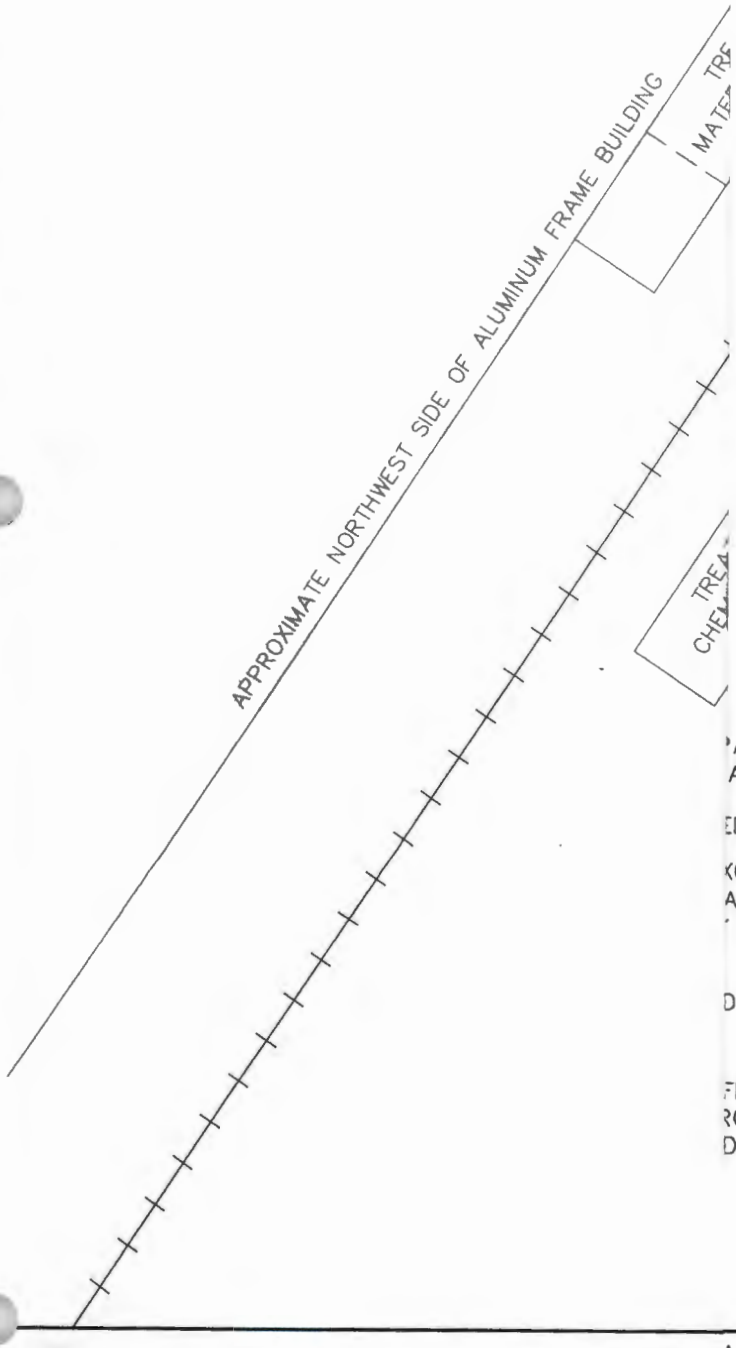
-15)

SITE

SCALE: 1" = 30'

PLAN NO. 7611

FIGURE 5



'A CONFIRMATION SAMPLE LOCATION
AD CONCENTRATION (mg/kg)

ED AREA

XCEEDING 1,000 mg/kg LEAD IN SOILS THAT
ABLE TO BE REMOVED DUE TO STRUCTURAL
' CONCERNS

D TAKE LINE

FROM 28 JANUARY 1991 PLOT
ROPOSED EASEMENTS FOR ROANOKE
D REDUCTION PROJECT BY T.P. PARKER

7611F6.DWG

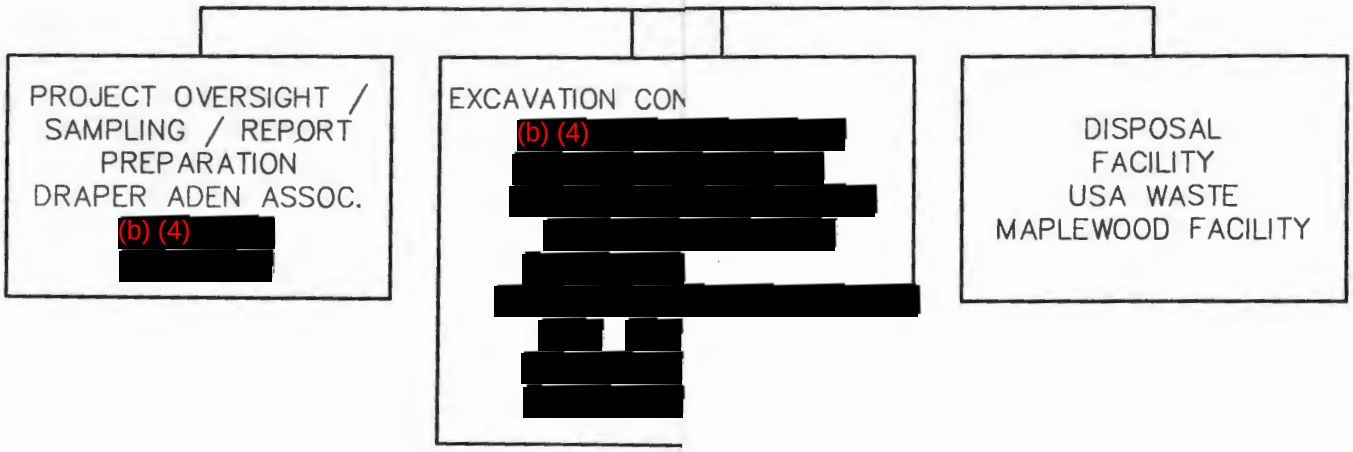
Draper Aden Associates
CONSULTING ENGINEERS
Blacksburg, Virginia – Richmond, Virginia

A)
AP
SITE

SCALE: 1" = 30'

PLAN NO. 7611

FIGURE
6



7611F7.DWG

Draper Aden Associates
CONSULTING ENGINEERS
Blacksburg, Virginia – Richmond, Virginia

SITE

SCALE: NONE

FIGURE 7

PLAN NO. 7611

TABLES

TABLE 1 REMOVAL ACTION CHRONOLOGY OF EVENTS
Cycle Systems, Inc. Walnut Avenue Lead Site

DATE	ACTION
14 December 1994/27 December 1994	Respondent/USEPA sign Order
16 January 1995/27 February 1995	Submittal/Approval of Response Action Plan (RAP)
13 March - 7 April 1995	Field Investigation to delineate the extent of soil/material exceeding the RRG
11 May 1995	Submittal of Field Investigation Report (FI)
23 August 1996	Submittal of Supplemental Removal Plan (SRP)
4 March 1997	Submittal of Revision to SRP
15 April 1997	USEPA approval of SRP
20 August 1997	USEPA approval of Removal Action Excavation Contractor (RAEC)
8 October 1997	USEPA approval of Removal Action Treatment Contractor (RATC)
20 October 1997	On-site RA Pre-Construction Meeting
21-24 October 1997	Site Preparation (vegetation clearing; installation of erosion/sediment controls; delineation of work areas)
27 October - 17 December 1997	Excavation, Treatment, and Off-Site Disposal of soil/material exceeding the RRG, as specified under the SRP
17 December 1997	Completion of RAEC and RATC site activities
14 January 1998	USEPA approval for disposal of decontamination water
19 January 1998	Disposal of decontamination water
23 January 1998	Completion of Site backfilling and regrading
6 February 1998	Submittal of CQA Final Report

Note: Monthly Progress Reports were prepared by Respondent and submitted to the USEPA.

TABLE 2 ***CONFIRMATION SAMPLE RESULTS***

Cycle Systems, Inc. Walnut Avenue Lead Site

Confirmation Sample Identification	Total Lead Concentration (mg/kg)
Equipment Storage Area (ESA)	
CESA-1	834
CESA-2	31.5
CESA-3	161
CESA-4	166
CESA-5	115
CESA-6	38.9
CESA-7	106
CESA-8	250
CESA-9	141
CESA-10	551
CESA-11	271
Drainage Ditch Area (DDA)	
CDDA-1	1,400
CDDA-2	539
Former Foundry Area (FFA)	
FOUND1	237
CFFA-1	98.4
CFFA-2	93.0
CFFA-3	444
CFFA-4	14.0
CFFA-5	1,360
CFFAD-5	1,590
CFFA-6	9,880
CFFA-7	831
CFFA-8	966
CFFA-9	32,600
CFFA-10	203
CFFA-11	37.8
CFFA-12	43.4
CFFA-13	248
CFFA-14	16.6
CFFA-15	35.8
CFFA-16	453
CFFA-17	44.0

TABLE 2 ***CONFIRMATION SAMPLE RESULTS***

Cycle Systems, Inc. Walnut Avenue Lead Site

Confirmation Sample Identification	Total Lead Concentration (mg/kg)
Under Roof Area (UR)	
UR-1	5,620
UR-2	147,000
CUR-1	3,590
CUR-2	7,370
CUR-3	521
CURD-3	704
CUR-4	111
River Bank Segment #15 (RBS-15)	
CRBS-1	1,740
CRBS-2	1,240
CRBS-3	1,290
Former Slag Area/Former Painting Area (FSA/FPA)	
FSAMETAL (METAL1)	75.6
CFSA-1	506
CFSA-2	275
CFSA-3	491
CFSA-4	69.5
CFSA-5	6,950
CFSA-6	1,650
CFSA-7	73.9
CFSA-8	3,110
CFSA-9	136
CFSA-10	136
CFSA-11	15,800
CFSA-12	1,170
CFSA-13	6,180
CFSA-14	3,410
CFSA-15	919
CFSA-16	176
CFSAD-16	151
CFSA-17	1,200
CFSA-18	4,710
CFSA-19	600
CFSA-20	296
CFSA-21	179

TABLE 2 ***CONFIRMATION SAMPLE RESULTS***

Cycle Systems, Inc. Walnut Avenue Lead Site

Confirmation Sample Identification	Total Lead Concentration (mg/kg)
Former Slag Area/Former Painting Area (FSA/FPA)	
CFSA-22	2,870
CFSA-23	36.2
CFSA-24	1,440
CFSA-25	132
CFSA-26	2,770
CFSA-27	305
CFSA-28	169
CFSAD-28	387
CFSA-29	30.3
CFPA-1	1,810
CFPA-2	445
CFPA-3	435
CFPA-4	2,480
CFPA-5	333
CFPA-6	205
CFPA-7	652
CFPA-8	3,290
CFPA-9	5,400
CFPA-10	85,000/324 *
CFPA-11	4,310
CFPA-12	1,690
CFPA-13	1,600
CFPA-14	730
CFPA-15	105
CFPAD-15	93.5
CFPA-16	40.1
CFPA-17	18.9
CFPA-18	17.1
CFPA-19	294
CFPA-20	2,290
CFPA-21	889

Notes: - Samples with the letter "D" before the number are blind duplicates of the samples with the same number (example: CFFAD-5 is a duplicate of CFFA-5).

- * Result for CFPA-10 orginally reported as 85,000 mg/kg; lab re-analyzed and reported result of 324 mg/kg. Area was re-excavated to ensure removal of lead-impacted soil/material.